Seattle Department of Planning and Development
— formerly the Department of Design, Construction and Land Use

CAM 303A

client assistance memo

Common Single Family and Duplex Building Code Requirements

April 2003

This list is an outline of pertinent code items required on plans for Single Family and Duplex projects. Additional items may be required depending on the specific project. Remember that these guidelines are not substitutes for codes and regulations. You are responsible for ensuring that your project complies with the specific requirements of all relevant codes and regulations.

In this publication the abbreviation SBC stands for the Seattle Building Code (UBC with Seattle Amendments), SENC stands for the Seattle Energy Code (same as the Washington State Energy Code for Group R occupancy) and SMC stands for the Seattle Mechanical Code (UMC with Seattle Amendments).

NOTE: *On your plans, do not just list code references; put all specific items on plans in the appropriate locations.*

Contents

1. REQUIREMENTS ON PLANS

Reference: SBC 106.5.2

- Professional stamp required - See: 106.5.2.2, Exceptions for single family subject to Building Official approval.
- Microfilmability - legible lettering, minimum 1/8"
- 18" x 18" minimum plan size
- Fully dimensioned floor plans
- Foundation plan
- Complete roof and floor framing plans including existing framing (and floor plans) affected by new additions and alterations
- Grade, species, spacing, span and size of all framing members - joists, studs, beams, headers, etc., glulam grade and combination
- Truss specifications and shop drawings
- Structural sections including interior and exterior sheathing, exterior siding, weather proofing, subfloor, sheathing, roof sheathing, double top plates, stud size and spacing, etc.
- Labeled use of all rooms
- Elimination of all options and alternates

2. BUILDING SEPARATION REQUIREMENTS

Proximity to property line:

Reference: SBC Table 5-A

- 1-hour wall is required if less than 3' to property line, including decks and eave overhangs. See SBC Table 7-B for 1-hour construction.
- No openings (doors and windows) in walls less than 3' to property line.

Eave overhangs:

Reference: SBC 503.2.1 and 705

- Wood eave extensions are limited to 12" into areas where openings are prohibited and must have 1-hour protection or be finished on the underside with at least 1/2" gypsum sheathing or equivalent.

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3. OCCUPANCY SEPARATION REQUIREMENTS

Garage/Dwelling:
Reference: SBC Table 3-B, 302.4 Exception 3, 302.2

- 1/2" regular gypsum board required between garage (U-1) and dwelling (R-3) including walls, columns, ceilings and beams supporting dwellings over garage areas.
- 1-3/8" thick (min.) solid core flush door with self-closer. (0.20 U-value door required for electric resistance heat.)
- "20 minute door" is an acceptable alternative to the 1-3/8" solid core flush door with self closer.
- See also: SBC 302.1 Exception 3 (carports)

4. SOUND TRANSMISSION CONTROL
Reference: SBC Section 1206

- Applies to R-3 duplex occupancies; for party wall or floor-ceiling assemblies.
- Floor-ceiling requires airborne sound insulation w/ STC = 50 or more and impact sound insulation w/IIC = 50 or more.
- Party walls require airborne sound insulation w/ STC = 50 or more.

5. LIFE SAFETY REQUIREMENTS

Stairs: Reference SBC 1003.3.3.

- Minimum width = 36"
- Maximum 8" rise
- Minimum 9" run
- Minimum 6'8" head room
- Handrail 34"-38" above tread nosing
- Handrail grasping dimension 1-1/4" minimum -2" maximum.
- For winding stairs provide a minimum 9" tread at 12" from the narrowest point and a minimum 6" tread at the narrowest point.

Decks/Guardrails:
Reference: SBC 509

- Guardrail required for walking surfaces 30" above adjacent grade or floor below
- 36" high required minimum
- 4" maximum clear space between intermediate rails

Smoke Detector:
Reference: SBC 310.9.1

- Locate on plans per code
- Is required with new construction and alterations of $2,500 or more, or when one or more sleeping rooms are added
- Must be powered by building wiring and have battery back-up in new construction and additions
- Can be battery-powered in alterations of $2,500 or more
- Is required in basement, connected with alarm audible in upstairs sleeping areas
- Battery-powered okay in existing building not being remodeled

Emergency Egress:
Reference: SBC 310.4

- One window in basement and each bedroom must meet these requirements:
  - 5.7 ft.^{2} minimum net open area
  - 20" minimum clear open width
  - 24" minimum clear open height
  - 44" maximum sill height

Security Requirements:
Reference: SBC 310.14.2 and 1003.3.1.8

- Minimum 1/2" throw on dead bolt or dead latch for doors
- Visitor observation port for exterior doors
- Windows within 10' of grade capable of being locked
- All locks must be able to be opened without the use of a key or any special knowledge or effort

Skylights:
Reference: SBC 2409 and 2603.7

Safety Glazing
Reference: SBC 2406

- Wired, tempered, laminated safety glass, must meet SBC Standard 24-2
- Glazing in or adjacent to doors (24") and glazing close to floor - see code for hazardous locations

6. NATURAL LIGHT REQUIREMENTS
Reference: SBC 1203.2

- Window area must be 1/10 floor area natural light for 10 sq. ft. minimum
- All habitable rooms except kitchens require natural light

7. VENTILATION REQUIREMENTS

Roof Ventilation:
Reference: SBC 1505.3

- 1 sq. ft. of venting per 150 sq. ft. of area to be vented - can be reduced to 1/300 if ventilators are provided in the upper portion of area to be vented
- 1" air space minimum required above roof insulation
- Cross-ventilation required

Crawl Space Ventilation:
Reference: SBC 2306.7

- 1 sq. ft. per 150 sq. ft. of under floor area
- Cross-ventilation also required. (See also SBC 2306.3 for crawl space clear heights, 18" minimum for joists, 12" minimum for wood girders without pressure treating)

Mechanical Ventilation/Outside Air Supply
Reference: SMC

- Habitable rooms must have outside air supply
- Kitchens, bathrooms, laundry rooms must be vented mechanically (SMC)

Room Dimension Requirements:
Reference: SBC 310.6 and 312.3

- General 7'6" minimum habitable space ceiling height
- 7'-0" minimum ceiling height in kitchen, bathroom and corridor
- Sloped ceiling must meet minimum height over1/2 of the area
- 6'6" minimum head room at garage ceiling
- Minimum floor area for sleeping room is 70 sq. ft.
- 7' minimum width for habitable room
- For exceptions to headroom in existing spaces, SEE: Director's Rule DR 8-97

8. MISCELLANEOUS REQUIREMENTS

Attic Access:
Reference: SBC 1505.1

- Opening to be 22" by 30" minimum
- Attic headroom to be 30" at access

Crawl Space:
Reference: SBC 2306.3

- 24" x 18" minimum opening

Fire and Draftstops:
Reference: SBC 708.3.1

- Install draft stops in floor-ceiling assemblies so that concealed space does not exceed 1000 sq. ft.
- Fire blocks and firestopping per 708.

Weather Protection:
Reference: SBC 1402

- Exterior wall protection, flashing and deck protection
- (See: Chapter 15, Roofs)

Non-combustible Surface on Garage Floors:
Reference: SBC 312.5

Drainage:
Reference: Seattle Municipal Code Chapters 22.800 - 22.808, Stormwater,Grading and Drainage Control Code

- Specify method of drainage control per Section 802.15 C and D
- Additional requirements, which may include a soils report prepared by a licensed soils engineer, may apply to sites designated as Environmentally Critical Areas.
- Best Management Practices (BMPs) Director's Rule 6-93.

9. BUILDING CONSTRUCTION REQUIREMENTS

Alternate design with calculations may be provided by a licensed Washington State structural engineer

Foundation:
Reference: SBC Table 18-I-C and 1806.1, 5

- Minimum 6" x 12" footing w/6" foundation wall for up to 2 floors supported
- Minimum 8" x 15" footing w/8" foundation wall for 3 floors supported
- Footings must bear on undisturbed soil minimum 12" below grade, including deck footings
- 1/2" x 10" anchor bolts minimum at 6' o.c. maximum with 2 bolts per piece of plate and at least 1 bolt within 12" of each end of each piece
- See: Tables 23-III-B-1 and 2 and 19-D for anchor bolt allowable lateral loads

Foundation Reinforcement:
Reference: SBC 1922.10.3 and 1902

- See SBC 1922.10.3 for allowable use of plain concrete
- Minimum 2 - No. 4 rebar at top and bottom of foundation and at all window and door openings for basement walls using plain concrete
- Fully reinforced concrete, See: Chapter 19
- Rebar cover (minimum) SBC 1907.7
  Bottom of footing 3" clear
  Wall outside 1-1/2" clear
  Wall inside 3/4" clear

Concrete:
Reference: SBC 1701.5, Table 18-I-C and 1922.10.3

Special inspection is not required for the following:
- When the structural design is based on an f'c no greater than 2500 psi provided the Building Official finds the work is of a minor nature and no special hazard exists
- During the mixing of concrete when the proportions of ingredients are established in accordance with the requirements of Table 19-A-8

Note: 5 sack mix = 2,000 psi
5-1/2 sack mix = 2,500 psi

Soil:
Reference: SBC Table 18-I-A and 1611.6

- 2,000 psf allowable bearing except in poor soil sites; assumed soil bearing greater than 2,000 psf generally requires soil engineer involvement
- Minimum design equivalent fluid pressure: 30 pcf per 1611.6, or per soil engineer report.

Wood/Earth Separation:
Reference: SBC 2306.2,3,4,5,6,8

- Pressure-treated wood or foundation cedar is required for wood in contact with concrete or wood close to earth per SBC 2306
- 6" minimum clearance between wood and earth

Framing:
Reference: SBC 2320

- Walls per SBC 2320.11. Additional requirements for conventional wood frame construction as related to seismic resistance are contained in SBC 2320.
- Roof and ceiling per SBC 2320.12

Wall Stud Size:
Reference: SBC 2326.11, Table 23-IV-B

- Size and spacing regulated per number of floors supported and clear height of stud.

Connections Between Beam/Columns:
Reference: SBC 2314

- Positive connection required for uplift and lateral movement

Masonry Fireplace and Chimneys:
Reference: SBC 3403.10

- Existing exterior unreinforced masonry chimneys shall not be extended except with approved metal chimneys in accordance with Section 814 of the Mechanical Code.
- Whenever an unreinforced masonry chimney is altered or when the building in which such a chimney is located undergoes substantial alteration, the chimney shall be tied at each floor or ceiling and the portion of the chimney above the roof shall be braced.
- Alternate: If extending masonry chimney with masonry, a structural engineer's services are required.

Metal Fireplaces and Chimneys:
Reference: SBC 3102.5, 6

- Must be UL- or ICBO- approved and must be installed per manufacturer's requirements
- Wood stoves require a separate furnace permit
- Requirement of approved heat shield with minimum 1" air space behind (SMC 313.2)
- WABO standards for solid fuel burning appliances, See: DPD Publication CAM 416: "Installation Requirements for Wood, Coal and Other Solid Fuel Burning Appliances"

Solid Fuel Burning Appliances
Reference: SMC 406.6.1
State of Washington Woodstove Regulations, RCW Chapter 70.94

- Tight fitting glass or metal doors
- Outside source of combustion air to the firebox

10. MECHANICAL CODE REQUIREMENTS

Reference SMC

Ventilation requirements:
Reference: SMC 406.3.2

- Source specific ventilation shall be required in each kitchen, bathroom, water closet, laundry room, indoor swimming pool, spa, and other rooms where excess water vapor or cooking odor is produced.
- Each dwelling unit shall be equipped with a whole house ventilation system which shall be capable of providing at least 0.35 air changes per hour, but not less than 15 cubic feet per minute per bedroom plus an additional 15 cubic feet per minute. Whole house ventilation systems shall supply outside air to all habitable rooms through individual outside air inlets, forced-air heating system, ducting or equivalent means.
- Intermittently operated whole house ventilation systems shall have the capability for continuous operation, and shall have a manual control and an automatic control.
- Noise: Whole house fans located four feet or less from the interior grille shall have a sone rating of 1.5 or less measured at 0.1 inches water gage.
- Air inlets: Individual room outside air inlets shall provide not less than 4 square inches (2581mm^2) of net free area of opening for each habitable space.

SMC Table 4-A
Minimum Source Specific Ventilation Capacity Requirements

	Bathrooms	Kitchens
Intermittently operating	50 cfm	100 cfm
Continuous operation	20 cfm	25 cfm

SMC Table 4-B
Whole House Ventilation Flow Requirements[1]

	CFM	
Bedrooms	Minimum	Maximum
2 or less	50	75
3	80	120
4	100	150
5	120	180

[1] This table shall not be used for dwelling units containing more than 5 bedrooms.

11. ENERGY CODE REQUIREMENTS

Reference: SENC

The following tables are from the Washington State Energy Code. The tables provide prescriptive and target UA requirements. See Sections 402.1 to 402.6 for Systems Analysis requirements.

- Provide glazing area calculations which show the product type, size, and number of each type. Glazing area is the rough opening area including the sash and frame. For doors with area more than 50% glass, use the rough opening area. For doors with less than 50% glass, use the daylight opening area. For garden/greenhouse windows, use double the rough opening area.
- Provide glazing and opaque door schedule which lists the U-factor and whether the U-factor is NFRC-certified or default. If a default is used, the schedule must include a description of the key energy-efficiency features that are necessary to achieve that default U-factor. (See CAM 303 for an example.)
- Provide the manufacturer and model number for all glazing products with a U-factor less than 0.40. This includes prescriptive option I in Table 6-1. It may also include Target UA and annual energy analysis compliance options.
- Specify the space heating system type on the drawings. (The building envelope requirements vary by space heat type when doing target UA and annual energy analysis calculations.)
- Generally all spaces, including unfinished spaces, are considered heated and must be insulated. If any spaces are to be considered unheated, they must be labeled as such on the drawings. Neither glazing nor floor area of unheated space is included in calculations.

References

1997 Seattle Building Code
1997 Seattle Mechanical Code
2002 Seattle Energy Code

Questions?

If you have questions about requirements detailed in this CAM, contact a permit specialist in the DPD Applicant Services Center, located on the 20th floor of Seattle Municipal Tower at 700 Fifth Ave., (206) 684-8850. For technical support on specific code issues, contact:

- Building Code Technical Support, (206) 684-4630
- Electrical Code Technical Support, (206) 684-5383
- Energy/Mech Code Tech Support, (206) 684-7846

WASHINGTON STATE ENERGY CODE — 2002 SECOND EDITION

TABLE 5-1
TARGET COMPONENT VALUES FOR GROUP R OCCUPANCY

COMPONENT	CLIMATE ZONE 1	CLIMATE ZONE 2
Glazing % Floor Area	15%	15%
Vertical Glazing U-Factor	U = 0.400	U = 0.400
Overhead Glazing U-Factor	U = 0.58	U = 0.58
Doors	U = 0.200 (R-5)	U = 0.200 (R-5)
Ceilings:Attic	U = 0.031 (R-38)	U = 0.031 (R-38)
Single Rafter/ Joist Vaulted	U = 0.034 (R-30)	U = 0.034 (R-30)
Walls:[2] Space Heat Type/ Electric Resistance	U = 0.058 (R-19A)	U = 0.044 (R-19+R-5)
Other	U = 0.062[1] (R-19)	U = 0.062[1] (R-19)
Floors	U = 0.029 (R-30)	U = 0.029 (R-30)
Slab on Grade Slab R-Value	F = 0.54 (R-10)	F = 0.54 (R-10)
BELOW GRADE INTERIOR		
Wall R-Value	R-19	R-19
2' Depth: Walls Slab	U = 0.043 F = 0.69	U = 0.043 F = 0.69
3.5' Depth: Walls Slab	U = 0.041 F = 0.64	U = 0.041 F = 0.64
7' Depth: Walls Slab	U = 0.037 F = 0.57	U = 0.037 F = 0.57
BELOW GRADE EXTERIOR		
Wall R-Value	R-10	R-12
2' Depth: Walls Slab	U = 0.070 F = 0.60	U = 0.061 F = 0.60
3.5' Depth: Walls Slab	U = 0.064 F = 0.57	U = 0.057 F = 0.57
7' Depth: Walls Slab	U = 0.056 F = 0.42	U = 0.050 F = 0.42

[1] Log and solid timber walls that have a minimum average thickness of 3.5" are exempt from wall target UA and proposed UA calculations.
[2] "A" means advanced framing. For more information, see Section 1005.2.

WASHINGTON STATE ENERGY CODE — 2002 SECOND EDITION

TABLE 6-1
PRESCRIPTIVE REQUIREMENTS[0,1] FOR GROUP R OCCUPANCY
CLIMATE ZONE 1

Option	Glazing Area[10]: % of Floor	Glazing U-Factor		Door[9] U-Factor	Ceiling[2]	Vaulted Ceiling[3]	Wall Above Grade	Wall• int[4] Below Grade	Wall• ext[4] Below Grade	Floor[5]	Slab[4] on Grade
		Vertical	Overhead[11]								
I.	12%	0.35	0.58	0.20	R-38	R-30	R15	R-15	R-10	R-30	R-10
II.*	15%	0.40	0.58	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
III.	25% Group R-1 Occupancy Only	0.40	0.58	0.20	R-38/ U=0.031	R-30/ U=0.034	R-21/ U=0.060	R-15	R-10	R-30/ U=0.029	R-10
IV.	Unlimited Group R-3 Occupancy Only	0.40	0.58	0.20	R-38	R-30	R-21	R-21	R-10	R-30	R-10
V.	Unlimited Group R-1 Occupancy Only	0.35	0.58	0.20	R-38/ U=0.031	R-30/ U=0.034	R-21/ U=0.060	R-15	R-10	R-30/ U=0.029	R-10

* Reference Case

0. Nominal R-values are for wood frame assemblies only or assemblies built in accordance with Section 601.1.
1. Minimum requirements for each option listed. For example, if a proposed design has a glazing ratio to the conditioned floor area of 13%, it shall comply with all of the requirements of the 15% glazing option (or higher). Proposed designs which cannot meet the specific requirements of a listed option above may calculate compliance by Chapters 4 or 5 of this Code.
2. Requirement applies to all ceilings except single rafter or joist vaulted ceilings. 'Adv' denotes Advanced Framed Ceiling.
3. Requirement applicable only to single rafter or joist vaulted ceilings.
4. Below grade walls shall be insulated either on the exterior to a minimum level of R-10, or on the interior to the same level as walls above grade. Exterior insulation installed on below grade walls shall be a water resistant material, manufactured for its intended use, and installed according to the manufacturer's specifications. See Section 602.2.
5. Floors over crawl spaces or exposed to ambient air conditions.
6. Required slab perimeter insulation shall be a water resistant material, manufactured for its intended use, and installed according to manufacturer's specifications. See Section 602.4.
7. Int. denotes standard framing 16 inches on center with headers insulated with a minimum of R-5 insulation.
8. This wall insulation requirement denotes R-19 wall cavity insulation plus R-5 foam sheathing.
9. Doors, including all fire doors, shall be assigned default U-factors from Table 10-6C.
10. Where a maximum glazing area is listed, the total glazing area (combined vertical plus overhead) as a percent of gross conditioned floor area shall be less than or equal to that value. Overhead glazing with U-factor of U=0.40 or less is not included in glazing area limitations.
11. Overhead glazing shall have U-factors determined in accordance with NFRC 100 or as specified in Section 502.1.5.
12. Log and solid timber walls with a minimum average thickness of 3.5" are exempt from this insulation requirement.